Clinical and other Notes.

SURGICAL TREATMENT OF FRACTURES.

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During the last six months of the past year (1910), cases of fracture of the bones of the leg have been treated in the Military Hospital, Devonport, by the operative treatment recommended by Arbuthnot Lane.

Although the number of cases treated in this way is small, the results show that this method of treatment should receive more attention in military hospitals than it has up till now.

In our series of cases, the fractures occurred in the tibia and fibula. Five cases have been operated upon. Of these four were recent fractures and one was an old un-united fracture. Of the four recent fractures, three were compound and one simple. The latter and two of the compound fractures were comminuted.

The method of treatment adopted in each case was the same. A curved incision, about four inches long, was made with its centre over the site of fracture in the tibia. The incision extended down to bone in its entire length and a large flap was reflected. This gave adequate exposure of the fractured ends of the bone. The blood clots were then turned out and the exposed area wiped dry.

Reduction and accurate apposition of the fractured ends of the tibia was now attempted by means of extension and manipulation of the lower fragment by an assistant, with counter-extension at the same time applied to the head of the tibia, the fractured ends being guided by the surgeon.

In every case this was a matter of some difficulty, especially as in three of our cases there was a comminution of the ends of the bone. With the ends of the bone fully exposed it was always easy to get the fragments into so-called good position, but the object aimed at was perfect apposition. Our guides in attaining this were the anterior edge of the tibia and fitting the irregular outline of the one fragment into the irregular outline of the other.

After perfect apposition of the ends of the bone had been attained, a steel plate with four holes, for screw nails, was applied to the surface of the bone, so that its centre lay over the line of fracture. Holes were then bored in the tibia through the holes in the plate and the screw nails were inserted. The fractured ends were then secured in proper position, and the plate was firmly screwed to the surface of the bone. In every case the periosteum was raised from the surface of the bone, and the plate was inserted between the periosteum and the bone. The periosteum
was then replaced over the plate and the wound was sewn up. In all the cases the operation wound healed by first intention. In one case (No. 1) the fracture was compound, and the original wound was represented by a small puncture. This healed very slowly and subsequently gave trouble, as a small blister formed and burst. The plate was found immediately below this. In this case the plate was removed at a subsequent operation on the 80th day, to obviate the risk of sepsis spreading to the medullary cavity, by way of a screw.

With regard to the technique of the operations. The cases were prepared in the usual way. Perchloride of mercury compresses were applied to the limb on the night previous to operation. Immediately before commencing the operation, the skin round the site of injury was scrubbed with a nailbrush and soap, then ether and a solution of biniodide of mercury in spirit were applied. The skin was prepared with iodine in one case. The instruments were kept in trays filled with sterile water. No antiseptics were allowed into the wound. Sterile towels were carefully applied to the limb, so that after the first incision no patient's skin was visible. Rubber gloves were worn by the surgeon and his assistant, and their fingers were not allowed to enter the wound. Plates, screws, &c., were lifted by means of instruments. "Knife and fork" surgery was carried out, and no ligatures were applied to vessels. Bleeding was stopped by pressure forceps and torsion.

The results lead one to the conclusion that, where there is difficulty in getting the bones into good position owing to over-riding or comminution an open operation with plating gives satisfactory results. The X-ray photographs were taken by Private F. J. R. Baiden, R.A.M.C.

Case I.—Compound Fracture, Right Tibia and Fibula.—Driver Y., age 23, Royal Field Artillery.

August 4th, 1910.—Patient was struck on the leg, at Okehampton, by a large boulder, and sustained a fracture of the right tibia and fibula, at the junction of the lower and middle thirds of the leg. There was a small punctured wound at the inner border of the shin over the seat of fracture, caused by a projecting sharp piece of bone.

August 8th. Operation.—The fractured ends were exposed. The displacement was reduced and a plate with four screws inserted. The limb was placed in a McIntyre's splint. August 15th.—Stitches were removed. Primary union. August 26th.—Massage commenced, leg remaining in the splint. September 14th.—Patient up on crutches, but was not allowed to put his weight on the limb. September 18th.—Patient commenced to walk with the aid of a stick. September 22nd.—Walking without his stick. September 28th.—Small blister appeared at the site of the wound caused by the projecting piece of bone. October 7th.—Bleb incised. October 17th.—X-ray negative showed the sinus was over
Case 3.—Before operation.

To illustrate "Surgical Treatment of Fractures."

By Major P. Evans, R.A.M.C., and Lieutenant J. Gilmour, R.A.M.C.
a screw. October 27th.—Plate was removed, as the wound did not heal. The screws were found to be loose. November 7th.—Wound completely healed. November 24th.—Patient discharged hospital on six weeks furlough, walking well. January 18th, 1911.—Man returned from furlough yesterday, and was examined by the medical officer in charge of barracks, who says, "at present the result is good."

Case 2.—Simple Comminuted Fracture, Right Tibia and Fibula.—Gunner S., age 23, Royal Garrison Artillery.

September 15th, 1910.—Patient was admitted to hospital suffering from fracture of the right tibia and fibula in the middle third of the leg. The accident was caused at football, the same afternoon. The fracture was simple. Attempts were repeatedly made to get the limb into good position without success; it was therefore decided to insert a plate.

September 27th. Operation.—The fractured ends were exposed and great deformity was found. There was a loose wedge-shaped portion of bone lying between the ends of the bone, but by leverage and manipulation the fragments were got into good position and the plate applied on the antero-internal surface of the tibia. It was not necessary to remove the loose fragments. September 28th.—Limb placed on a Neville's splint. October 3rd.—Stitches removed; primary union. November 2nd.—Plaster splint applied, patient allowed up on crutches the following day. November 12th.—Allowed to walk on the injured leg with one inside Cline splint. November 22nd.—Patient walking well. November 30th.—Discharged to furlough, walking well. January 21st, 1911.—Returned from furlough yesterday, can walk over 4 miles without a limp.

Case 3.—Compound Comminuted Fracture, Right Tibia and Fibula.—Private E., age 19, Leinster Regiment.

December 14th, 1910.—Patient was admitted to hospital suffering from a compound comminuted fracture of the right tibia and fibula. The fracture was situated at the junction of the lower and middle thirds of the tibia. The accident was caused by the patient being thrown from a cart. There was much displacement, and an inch and a half of shortening of the limb. There was a small punctured wound on the inner side of the leg at the level of the lower end of the upper fragment.

December 16th.—Operation.—The ends of the tibia were exposed by a curved incision and the displacement was reduced. A plate with four screws was inserted. December 24th.—Stitches were removed. Primary union. The original punctured wound was not quite healed. January 4th, 1911.—The punctured wound healed. January 16th.—Massage commenced. Leg in excellent position.

Case 4.—Compound Comminuted Fracture, Left Tibia and Fibula.—Private B., aged 20, Royal Marine Light Infantry.

December 21st, 1910.—Patient was admitted to hospital suffering from a compound fracture in the middle third of the left tibia and fibula. The accident was received at football. When the patient was admitted
there was a portion of tibia \( \frac{3}{4} \) inch long projecting through his stocking and covered with mud. The stocking was cut away and the projecting piece of bone was scraped free of mud and swabbed over with 1 in 20 carbolic acid and then reduced.

December 23rd.—Operation.—The ends of the bone were exposed by means of a semicircular incision. There was much displacement which was difficult to reduce owing to a loose wedge-shaped portion of bone between the ends. A steel plate with four screws was inserted. December 30th.—Stitches were removed. Primary union. The original wound was almost healed, only a small granulating one being present. January 5th, 1911.—Original wound healed. January 16th.—Massage commenced. January 21st.—Limb placed on a Neville’s splint.

Case 5.—Un-united Fracture following a Simple Comminuted Fracture of Right Tibia and Fibula.—Gunner W., aged 22, Royal Garrison Artillery.

August 27th, 1909.—Whilst playing football at Falmouth patient was kicked; the result was a fracture of his right tibia and fibula at the junction of the middle and lower thirds. There was extensive swelling of the limb and much displacement and shortening. The fracture was easily set, but would not keep in place. September 5th.—Re-set under chloroform. September 9th.—Again re-set.

October 7th.—Operation.—As the position of the limb was unsatisfactory the ends of the tibia were exposed and wired, the loose fragment being removed. January 29th, 1910.—X-rays did not show any callus. March 4th.—Wire removed, as it was irritating the skin. Firm union had not taken place. August 16th.—Operation. As the tibia remained un-united it was exposed by a large curved incision. A wedge-shaped piece of bone of sufficient size to correct the malposition was removed from the ends, the callus was broken across, and the axis of the limb restored. A plate and four screws inserted. January 24th, 1911.—The union was slow, but is now firm. There is still shortening of the limb and some deformity, but the patient can walk without the aid of a stick and is being discharged to civil life.


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The strength of the women and children in the Aldershot Command, from among whom the patients are admitted, is at least 7,074, including both those “on” and those “off” the strength, i.e., 2,854 women and 4,220 children. An ever-changing population.

(1) The number of maternity cases admitted was 474, i.e., 310 multiparae and 164 primiparae.